

Application No.: 10/500776  
Docket No.: CL1927USPCT

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Page 4

Amendments to Claims

1. (currently amended): A process for manufacturing a catalyst coated membrane comprising:

- (a) ~~providing applying at least one electrocatalyst coating composition to~~ an element comprising a highly fluorinated polymer membrane having a first surface and a an opposite second surface, and a first dimensionally stable temporary substrate adhered to the second surface of the polymer membrane, wherein the coating composition is applied to at least portions of the first surface of the polymer membrane;
- (b) printing a first electrocatalyst coating composition on the first surface of the polymer membrane;
- (c) drying the first electrocatalyst coating composition to form at least one first electrode on the first surface of the polymer membrane of the element;
- (d) applying a second dimensionally stable temporary substrate to the at least one first electrode formed in step (b);
- (e) removing the first dimensionally stable temporary substrate from the second surface of the polymer membrane after the completion of step (d);
- (f) ~~printing applying at least one a second~~ electrocatalyst coating composition ~~on to~~ at least a portion of the second surface of the polymer membrane; and
- (g) drying the second electrocatalyst coating composition on the polymer membrane to form at least one second electrode on the second surface of the polymer membrane, so as to form a sandwich comprising the at least one second electrode, the polymer membrane, the at least one first electrode and the second dimensionally stable temporary substrate.

2. (currently amended): The process of Claim 1 wherein the element is prepared by applying a first dimensionally stable temporary substrate to the second surface of the polymer membrane.

3. (original): The process of Claim 2 wherein the applying is by lamination.

Application No.: 10/500776  
Docket No.: CL1927USPCT

Page 5

4. (currently amended): The process of Claim 1 further comprising:  
(gh) removing the second dimensionally stable temporary substrate to form a catalyst coated membrane comprising a polymer membrane sandwiched between the at least one first and second electrodes.
5. (currently amended): The process of Claim 1 wherein the first and second electrocatalyst coating compositions each comprises an electrocatalyst, an ion exchange polymer and a liquid medium.
6. (original): The process of Claim 5 wherein the ion exchange polymer is perfluorinated.
7. (currently amended): The process of Claim 2 wherein the first and second electrocatalyst coating compositions further each comprises fluorinated polymer.
8. (original): The process of Claim 7 wherein the fluorinated polymer is a PTFE fibril.
9. (currently amended): The process of Claim 1 wherein the ~~applying at least one~~ printing of the first and second electrocatalyst coating compositions is accomplished by flexographic printing.
10. (currently amended): The process of Claim 1 wherein the application printing of at least one of the first and second the electrocatalyst coating compositions and drying steps are repeated to form multiple electrode layers covering the same part of the surface of the membrane.
11. (currently amended): The process of Claim 1 wherein the application printing of at least one of the first and second the electrocatalyst coating compositions and drying steps are repeated to form multiple electrode layers that vary in composition among said multiple layers.
12. (currently amended): The process of Claim 1 wherein the application printing of at least one of the first and second the electrocatalyst coating compositions and drying steps provide an electrode layer with a predetermined nonuniform distribution of electrocatalyst across the electrode layer.

Application No.: 10/500776  
Docket No.: CL1927USPCT

Page 6

13. (canceled)

14. (canceled)

15. (canceled)

16. (currently amended): The process of Claim 1 wherein the second electrocatalyst coating composition applied printed onto the second opposite surface of the polymer membrane to form the second electrode is in registration with the first electrode on the first surface of the polymer membrane.

17. (currently amended): The process of Claim 16 wherein the first electrocatalyst catalyst coating composition printed on applied to the first surface of the polymer membrane is different from that applied to the second electrocatalyst coating composition printed on the second surface of the polymer membrane.

18. (currently amended): The process of Claim 1 wherein the applying in step (d) steps(e) or (e), or both is by lamination.

19. (currently amended): The process of Claim 1 wherein the removing in step (de) is by peeling.

20. (currently amended): The process of Claim 1 wherein drying in steps (c) and (g) is conducted at ambient temperatures temperature.

21. (currently amended): The process of Claim 1 wherein the first and second dimensionally stable substrates are selected from the group consisting of temporary substrate is selected from the group consisting of polyesters; polyamides, polycarbonates, fluoropolymers, polyacetals, polyolefins, and polyimides.

22. (original): The process of Claim 21 wherein the first, second or both dimensionally stable substrates is polyester.

23 – 26. (canceled)